AECOM
1350 Deming Way
Middleton, WI 53562
aecom.com

Project name:
NCDOT INFRA Project

Project ref:

To:
Carey Barr

From:
Jeff Sandberg

CC:
Patricia Macchi

Date:
March 1, 2019

Memorandum

Subject: NCDOT INFRA Safety Analysis

AECOM is preparing an INFRA grant application for improvements to a number of highway segments and locations on I-87 and I-95 in North Carolina. The application includes an analysis of the economic benefit of crash reduction for these improvements. The purpose of this memo is to document the methodology and results of the crash analysis.

Background

The projects in the INFRA grant application include a variety of improvement types. A summary of these improvements is in table 1 below:

Table 1, Project Summary

Project Number	Highway	Location	Description
I-6007	I-87	SR2233 Interchange	Convert Diamond Interchange to Diverging Diamond Interchange
I-6005	I-87	Bus US 64 to US 264	Widen from four lanes to six lanes
H141265a	I-87	US 264 to NC 58	Widen inside shoulder to 4’ and outside shoulder to 10’
U-6149	I-87	NC 58 to Thomas Road Overpass	Widen inside shoulder to 4’ and outside shoulder to 10’
H141265b	I-87	Thomas Road Overpass to Martin County Line	Widen inside shoulder to 4’ and outside shoulder to 10’
R-5869A	US 17	SR 1336/1338 Intersection	Convert At-Grade Intersection to Interchange
R-5869B	US 17	SR 1300 Intersection	Convert At-Grade Intersection to Interchange
H129200-BA	I-95	I-74 to SR1528	Widen from four lanes to eight lanes
I-5879	I-95	SR 1528 Interchange	Convert Diamond Interchange to Roundabout Interchange.
H129200-BB	I-95	SR1528 to US 301	Widen from four lanes to eight lanes
I-5987	I-95	US 301 to Bus US 301	Widen from four lanes to eight lanes

Methodology

When completing a crash analysis that’s used for the determination of the economic benefit of safety improvements, the preferred method is to complete a predictive safety evaluation in accordance with the procedures in the FHWA Highway

Safety Manual (HSM). A predictive safety evaluation provides the expected safety performance of a facility based on crash history, long-term trends, and experience at similar facilities.

The three primary data sources needed to complete a predictive safety evaluation include:

1. Traffic Volumes – Forecasted AADT for each project was calculated using AADT from the NCDOT AADT Web Map and annual average growth rates from the Travel Demand Model. Forecasted 2035 AADT was used for the analysis as the analysis year for the 2025 – 2045 study period.

2. Crash Data – Given the effort to gather crash data for these projects, the effort to code crash statistics into the safety models, and the short timeframe to complete this analysis, crash data was not used in the analysis. This means the results are based solely on crash experience at similar sites throughout the country and not "normalized" for site crash history.

3. Roadway Geometry – Roadway geometry was determined using measurement tools in Google Earth.

A predictive safety analysis was completed for these projects using FHWA's Enhanced Interchange Safety Analysis Tool (ISATe) for freeway segments and interchanges, and the Interactive Highway Safety Design Model (IHSDM) for non-freeway segments and intersections. The analysis method includes predictive safety analysis of the existing conditions and proposed conditions. The expected safety benefit of the project was calculated as the difference between the existing conditions and proposed conditions.

ISATe and IHSDM have the ability to account for a variety of highway improvements, but many potential improvements cannot be evaluated within these programs. When planned improvements cannot be evaluated within the program, the appropriate analysis method is to complete the proposed conditions analysis in ISATe or IHSDM, then multiply the resulting predicted crash frequency by a crash modification factor (CMF) for additional improvements.

The HSM cautions against using more than two CMFs for a single analysis and using multiple CMFs that have overlapping benefit. Because of this, the analysis included no more than two CMFs and potential CMFs were qualitatively examined to assure they were reasonably independent of each other.

A summary of the method used for each project is in Table 2 below. All CMF ID references can be found on the website www.cmfclearghouse.org.

Table 2, Predictive Safety Analysis Methodology Summary

Project Number	Software Used	Crash Reduction Calc Method		CMF Details
		With Software?	With CMF?	
I-6007	ISATe	No	Yes	ID 8258, "Convert Diamond Interchange to DDI" (CMF=0.67 for all crash types and severities)
I-6005	ISATe	Yes	No	N/A
H141265a	ISATe	Yes	No	N/A
U-6149	ISATe	Yes	No	N/A
H141265b	ISATe	Yes	No	N/A
R-5869A	IHSDM	No	Yes	ID 459, "Convert At-Grade Intersection into grade-separated interchange" (CMF = 0.58 for all crash types and severities)
R-5869B	IHSDM	No	Yes	ID 459, "Convert At-Grade Intersection into grade-separated interchange" (CMF = 0.58 for all crash types and severities)
H129200-BA	ISATe	Yes	No	N/A
I-5879	ISATe	No	Yes	ID 9448, "Convert to Roundabout Interchange" (CMF = 0.756 for all crash types and severities)
H129200-BB	ISATe	Yes	No	N/A
I-5987	ISATe	Yes	No	N/A

Evaluation Results

The estimated crash reduction results for each project is in Table 3 below. Detailed ISATe and IHSDM reports are attached.

Table 3, Crash Reduction Summary (crashes per year)						
	Crash Severity					
	K	A	B	C	PDO	TOT
Project I-6007						
Existing Conditions	0	0.1	0.9	3.9	9	13.9
Crash Reduction (CMF)	**0**	**0**	**0.3**	**1.3**	**3**	**4.6**
Project I-6005						
Existing Conditions	1.6	4.4	23.4	56.7	185.3	271.4
With Improvements	1.6	4.2	22.8	36.5	136.5	201.6
Crash Reduction	**0**	**0.2**	**0.6**	**20.2**	**48.8**	**69.8**
Project H141265a						
Existing Conditions	1.5	3.8	19.8	30.5	90.2	145.8
With Improvements	1.2	3.1	16.2	25	81.2	126.7
Crash Reduction	**0.3**	**0.7**	**3.6**	**5.5**	**9**	**19.1**
Project U-6149						
Existing Conditions	2.2	5.7	29.5	45.6	160.8	243.8
With Improvements	1.9	5	26	40.1	147.5	220.5
Crash Reduction	**0.3**	**0.7**	**3.5**	**5.5**	**13.3**	**23.3**
Project H141265b						
Existing Conditions	0.7	1.8	9.4	14.7	43.5	70.1
With Improvements	0.6	1.5	7.9	12.3	40.5	62.8
Crash Reduction	**0.1**	**0.3**	**1.5**	**2.4**	**3**	**7.3**
Project R-5869A						
Existing Conditions	1.34				2.97	4.31
Crash Reduction (CMF)	**0.59**				**1.31**	**1.90**
Project R-5869B						
Existing Conditions	1.46				3.07	4.53
Crash Reduction (CMF)	**0.64**				**1.35**	**1.99**
Project H1292-BA						
Existing Conditions	1	2.8	14.7	39	143	200.5
With Improvements	1.1	2.9	15.2	24.1	90.1	133.4
Crash Reduction	**-0.1**	**-0.1**	**-0.5**	**14.9**	**52.9**	**67.1**
Project I-5879						
Existing Conditions	0	0	0.1	0.6	2.5	3.2
Crash Reduction (CMF)	**0**	**0**	**0.02**	**0.15**	**0.61**	**0.78**
Project H1292-BB						
Existing Conditions	1.1	2.9	15	39.2	147.8	206
With Improvements	1.1	2.8	14.8	22.9	87.3	128.9
Crash Reduction	**0**	**0.1**	**0.2**	**16.3**	**60.5**	**77.1**

Project I-5987						
Existing Conditions	3.8	9.6	40.9	78.8	350.5	483.6
With Improvements	4	9.6	41.2	52.9	235.8	343.5
Crash Reduction	**-0.2**	**0**	**-0.3**	**25.9**	**114.7**	**140.1**

Output Summary

General Information

Project description:	Project I-6007 (Convert I-87 & SR 2233 Interchange to DDI) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	13.9	0.0	0.1	0.9	3.9	9.0
Estimated average crash freq. during Study Period, crashes/yr:	13.9	0.0	0.1	0.9	3.9	9.0

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	2	13.9	0.0	0.1	0.9	3.9	9.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	13.9	0.0	0.1	0.9	3.9	9.0
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.1	0.0	0.0	0.0	0.0	0.1
	Right-angle crashes:	3.3	0.0	0.0	0.2	1.0	2.0
	Rear-end crashes:	8.0	0.0	0.1	0.5	2.4	4.9
	Sideswipe crashes:	1.5	0.0	0.0	0.0	0.2	1.3
	Other multiple-vehicle crashes:	0.2	0.0	0.0	0.0	0.0	0.2
	Total multiple-vehicle crashes:	13.1	0.0	0.1	0.8	3.7	8.4
Single vehicle	Crashes with animal:	0.0	0.0	0.0	0.0	0.0	0.0
	Crashes with fixed object:	0.6	0.0	0.0	0.0	0.1	0.4
	Crashes with other object:	0.0	0.0	0.0	0.0	0.0	0.0
	Crashes with parked vehicle:	0.0	0.0	0.0	0.0	0.0	0.0
	Other single-vehicle crashes	0.2	0.0	0.0	0.0	0.1	0.1
	Total single-vehicle crashes:	0.8	0.0	0.0	0.0	0.2	0.5
	Total crashes:	13.9	0.0	0.1	0.9	3.9	9.0

Evaluation Site Summary

General Information

Project description:	Project I-6007 (Convert I-87 & SR 2233 Interchange to DDI) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		0.000	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	0	0.000	0
2	0	0.000	0
3	0	0.000	0
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	D4	Signal	EB Ramps
2	D4	Signal	WB Ramps
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project I-6005 (I-87 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	271.4	1.6	4.4	23.4	56.7	185.3
Estimated average crash freq. during Study Period, crashes/yr:	271.4	1.6	4.4	23.4	56.7	185.3

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	8	271.4	1.6	4.4	23.4	56.7	185.3
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	271.4	1.6	4.4	23.4	56.7	185.3
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.9	0.0	0.0	0.2	0.4	0.3
	Right-angle crashes:	5.1	0.0	0.1	0.6	1.5	2.9
	Rear-end crashes:	164.8	1.0	2.8	14.7	35.7	110.7
	Sideswipe crashes:	55.8	0.2	0.7	3.5	8.6	42.8
	Other multiple-vehicle crashes:	6.1	0.0	0.1	0.6	1.5	3.8
	Total multiple-vehicle crashes:	232.7	1.4	3.7	19.6	47.5	160.5
Single vehicle	Crashes with animal:	0.6	0.0	0.0	0.0	0.0	0.5
	Crashes with fixed object:	27.8	0.2	0.5	2.8	6.6	17.7
	Crashes with other object:	4.2	0.0	0.0	0.2	0.5	3.5
	Crashes with parked vehicle:	0.6	0.0	0.0	0.1	0.1	0.4
	Other single-vehicle crashes	5.5	0.1	0.2	0.8	1.9	2.6
	Total single-vehicle crashes:	38.7	0.3	0.7	3.8	9.1	24.8
	Total crashes:	271.4	1.6	4.4	23.4	56.7	185.3

Evaluation Site Summary

General Information

Project description:	Project I-6005 (I-87 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):	6.000		
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	1.190	1-W Lim to St Crv
2	4	0.680	2 - St Crv to Lizard Lick Gore
3	4	0.550	3 - Gore to Gore
4	4	0.730	Lizard Lick Gore to End Crv
5	4	1.060	End Crv to End Crv
6	4	0.720	End Crv to Arendell Gore
7	4	0.590	Gore to Gore
8	5	0.480	Arendell Gore to E Limits
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project I-6005 (I-87 Widening) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	201.6	1.6	4.2	22.8	36.5	136.5
Estimated average crash freq. during Study Period, crashes/yr:	201.6	1.6	4.2	22.8	36.5	136.5

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	8	201.6	1.6	4.2	22.8	36.5	136.5
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	201.6	1.6	4.2	22.8	36.5	136.5
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.6	0.0	0.0	0.2	0.2	0.2
	Right-angle crashes:	3.6	0.0	0.1	0.6	0.9	2.0
	Rear-end crashes:	115.9	1.0	2.6	14.2	22.9	75.1
	Sideswipe crashes:	38.8	0.2	0.6	3.4	5.5	29.0
	Other multiple-vehicle crashes:	4.3	0.0	0.1	0.6	0.9	2.6
	Total multiple-vehicle crashes:	163.2	1.4	3.5	19.0	30.5	108.9
Single vehicle	Crashes with animal:	0.6	0.0	0.0	0.0	0.0	0.6
	Crashes with fixed object:	27.5	0.2	0.5	2.7	4.3	19.7
	Crashes with other object:	4.4	0.0	0.0	0.2	0.3	3.8
	Crashes with parked vehicle:	0.6	0.0	0.0	0.1	0.1	0.4
	Other single-vehicle crashes	5.2	0.1	0.1	0.8	1.3	2.9
	Total single-vehicle crashes:	38.3	0.3	0.7	3.8	6.0	27.6
	Total crashes:	201.6	1.6	4.2	22.8	36.5	136.5

Evaluation Site Summary

General Information

Project description:	Project I-6005 (I-87 Widening) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		6.000	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	6	1.190	1-W Lim to St Crv
2	6	0.680	2 - St Crv to Lizard Lick Gore
3	6	0.550	3 - Gore to Gore
4	6	0.730	Lizard Lick Gore to End Crv
5	6	1.060	End Crv to End Crv
6	6	0.720	End Crv to Arendell Gore
7	6	0.590	Gore to Gore
8	6	0.480	Arendell Gore to E Limits
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project H141265a (Update I-87 to Interstate Standards) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	145.8	1.5	3.8	19.8	30.5	90.2
Estimated average crash freq. during Study Period, crashes/yr:	145.8	1.5	3.8	19.8	30.5	90.2

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	6	145.8	1.5	3.8	19.8	30.5	90.2
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	145.8	1.5	3.8	19.8	30.5	90.2
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.3	0.0	0.0	0.1	0.1	0.1
	Right-angle crashes:	1.4	0.0	0.0	0.3	0.4	0.7
	Rear-end crashes:	42.9	0.5	1.2	6.2	9.6	25.3
	Sideswipe crashes:	14.0	0.1	0.3	1.5	2.3	9.8
	Other multiple-vehicle crashes:	1.6	0.0	0.0	0.3	0.4	0.9
	Total multiple-vehicle crashes:	60.1	0.6	1.6	8.3	12.9	36.7
Single vehicle	Crashes with animal:	1.3	0.0	0.0	0.0	0.1	1.2
	Crashes with fixed object:	61.5	0.6	1.6	8.3	12.7	38.3
	Crashes with other object:	9.1	0.0	0.1	0.6	0.9	7.4
	Crashes with parked vehicle:	1.3	0.0	0.0	0.2	0.3	0.9
	Other single-vehicle crashes	12.4	0.2	0.5	2.4	3.7	5.7
	Total single-vehicle crashes:	85.6	0.8	2.2	11.5	17.6	53.5
	Total crashes:	145.8	1.5	3.8	19.8	30.5	90.2

Evaluation Site Summary

General Information

Project description:	Project H141265a (Update I-87 to Interstate Standards) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):	22.280		
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	3.300	US 264 to NC 39
2	4	2.850	NC 39 to Rocky Cross
3	4	4.240	Rocky Cross to 231
4	4	6.570	231 to Old Franklin
5	4	4.170	Old Franklin to Bus 64
6	4	1.150	Bus 64 to 58
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project H141265a (Update I-87 to Interstate Standards) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	126.7	1.2	3.1	16.2	25.0	81.2
Estimated average crash freq. during Study Period, crashes/yr:	126.7	1.2	3.1	16.2	25.0	81.2

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	6	126.7	1.2	3.1	16.2	25.0	81.2
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	126.7	1.2	3.1	16.2	25.0	81.2
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.3	0.0	0.0	0.1	0.1	0.1
	Right-angle crashes:	1.4	0.0	0.0	0.3	0.4	0.7
	Rear-end crashes:	42.4	0.5	1.2	6.2	9.5	25.1
	Sideswipe crashes:	13.8	0.1	0.3	1.5	2.3	9.7
	Other multiple-vehicle crashes:	1.6	0.0	0.0	0.3	0.4	0.9
	Total multiple-vehicle crashes:	59.5	0.6	1.6	8.2	12.7	36.4
Single vehicle	Crashes with animal:	1.1	0.0	0.0	0.0	0.0	1.0
	Crashes with fixed object:	48.2	0.4	1.1	5.8	8.9	32.1
	Crashes with other object:	7.4	0.0	0.1	0.4	0.6	6.2
	Crashes with parked vehicle:	1.1	0.0	0.0	0.1	0.2	0.7
	Other single-vehicle crashes	9.4	0.1	0.3	1.7	2.6	4.8
	Total single-vehicle crashes:	67.2	0.6	1.5	8.0	12.3	44.8
	Total crashes:	126.7	1.2	3.1	16.2	25.0	81.2

Evaluation Site Summary

General Information

Project description:	Project H141265a (Update I-87 to Interstate Standards) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):	22.280		
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	3.300	US 264 to NC 39
2	4	2.850	NC 39 to Rocky Cross
3	4	4.240	Rocky Cross to 231
4	4	6.570	231 to Old Franklin
5	4	4.170	Old Franklin to Bus 64
6	4	1.150	Bus 64 to 58
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project U-6149 (Update I-87 to interstate standards) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	243.8	2.2	5.7	29.5	45.6	160.8
Estimated average crash freq. during Study Period, crashes/yr:	243.8	2.2	5.7	29.5	45.6	160.8

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	10	243.8	2.2	5.7	29.5	45.6	160.8
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	243.8	2.2	5.7	29.5	45.6	160.8
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.6	0.0	0.0	0.2	0.2	0.2
	Right-angle crashes:	3.4	0.0	0.1	0.6	0.9	1.8
	Rear-end crashes:	108.5	1.0	2.7	14.1	21.7	68.9
	Sideswipe crashes:	36.1	0.3	0.7	3.4	5.2	26.6
	Other multiple-vehicle crashes:	4.0	0.0	0.1	0.6	0.9	2.4
	Total multiple-vehicle crashes:	152.7	1.4	3.6	18.8	29.0	99.9
Single vehicle	Crashes with animal:	1.5	0.0	0.0	0.0	0.1	1.3
	Crashes with fixed object:	65.4	0.6	1.5	7.8	12.0	43.6
	Crashes with other object:	10.0	0.0	0.1	0.5	0.8	8.5
	Crashes with parked vehicle:	1.4	0.0	0.0	0.2	0.2	1.0
	Other single-vehicle crashes	12.8	0.2	0.4	2.2	3.4	6.5
	Total single-vehicle crashes:	91.1	0.8	2.1	10.8	16.6	60.8
	Total crashes:	243.8	2.2	5.7	29.5	45.6	160.8

Evaluation Site Summary

General Information

Project description:	Project U-6149 (Update I-87 to interstate standards) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):	15.220		
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	2.270	58 to Red Oak
2	4	2.330	Red Oak to Old Carriage
3	4	1.180	Old Carriage to I-95
4	4	1.760	I-95 to Winstead
5	4	0.860	Winstead to Bus 64
6	4	1.000	Bus 64 to Wesleyan
7	4	0.700	Wesleyan to Benvenue
8	4	0.940	Benvenue to Centura
9	4	2.260	Centura to Raleigh
10	4	1.920	Raleigh to Thomas
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project U-6149 (Update I-87 to interstate standards) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	220.5	1.9	5.0	26.0	40.1	147.5
Estimated average crash freq. during Study Period, crashes/yr:	220.5	1.9	5.0	26.0	40.1	147.5

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	10	220.5	1.9	5.0	26.0	40.1	147.5
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	220.5	1.9	5.0	26.0	40.1	147.5
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.6	0.0	0.0	0.1	0.2	0.2
	Right-angle crashes:	3.4	0.0	0.1	0.6	0.9	1.8
	Rear-end crashes:	107.5	1.0	2.7	13.9	21.5	68.3
	Sideswipe crashes:	35.7	0.2	0.6	3.3	5.2	26.3
	Other multiple-vehicle crashes:	4.0	0.0	0.1	0.6	0.9	2.4
	Total multiple-vehicle crashes:	151.2	1.4	3.6	18.6	28.7	99.0
Single vehicle	Crashes with animal:	1.1	0.0	0.0	0.0	0.0	1.1
	Crashes with fixed object:	49.7	0.4	1.0	5.3	8.2	34.7
	Crashes with other object:	7.8	0.0	0.1	0.4	0.6	6.7
	Crashes with parked vehicle:	1.1	0.0	0.0	0.1	0.2	0.8
	Other single-vehicle crashes	9.5	0.1	0.3	1.5	2.4	5.2
	Total single-vehicle crashes:	69.3	0.5	1.4	7.4	11.4	48.5
	Total crashes:	220.5	1.9	5.0	26.0	40.1	147.5

Evaluation Site Summary

General Information

Project description:	Project U-6149 (Update I-87 to interstate standards) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):	15.220		
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	2.270	58 to Red Oak
2	4	2.330	Red Oak to Old Carriage
3	4	1.180	Old Carriage to I-95
4	4	1.760	I-95 to Winstead
5	4	0.860	Winstead to Bus 64
6	4	1.000	Bus 64 to Wesleyan
7	4	0.700	Wesleyan to Benvenue
8	4	0.940	Benvenue to Centura
9	4	2.260	Centura to Raleigh
10	4	1.920	Raleigh to Thomas
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	ProjectH141265b (I-87 Upgrade to Interstate Standards) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	70.2	0.7	1.8	9.4	14.7	43.5
Estimated average crash freq. during Study Period, crashes/yr:	70.2	0.7	1.8	9.4	14.7	43.5

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	4	70.2	0.7	1.8	9.4	14.7	43.5
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	70.2	0.7	1.8	9.4	14.7	43.5
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.1	0.0	0.0	0.0	0.1	0.0
	Right-angle crashes:	0.7	0.0	0.0	0.1	0.2	0.3
	Rear-end crashes:	20.8	0.2	0.6	3.2	4.9	11.9
	Sideswipe crashes:	6.7	0.1	0.1	0.8	1.2	4.6
	Other multiple-vehicle crashes:	0.8	0.0	0.0	0.1	0.2	0.4
	Total multiple-vehicle crashes:	29.2	0.3	0.8	4.2	6.6	17.3
Single vehicle	Crashes with animal:	0.6	0.0	0.0	0.0	0.0	0.6
	Crashes with fixed object:	29.4	0.3	0.7	3.8	5.9	18.8
	Crashes with other object:	4.4	0.0	0.1	0.3	0.4	3.7
	Crashes with parked vehicle:	0.6	0.0	0.0	0.1	0.1	0.4
	Other single-vehicle crashes	5.9	0.1	0.2	1.1	1.7	2.8
	Total single-vehicle crashes:	41.0	0.4	1.0	5.2	8.2	26.3
	Total crashes:	70.2	0.7	1.8	9.4	14.7	43.5

Evaluation Site Summary

General Information

Project description:	ProjectH141265b (I-87 Upgrade to Interstate Standards) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		12.040	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	3.170	Thomas overpass to Kingsboro
2	4	5.820	Kingsboro to McNair
3	4	2.320	Mcnair to 258
4	4	0.730	258 to Mutual
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	ProjectH141265b (I-87 Upgrade to Interstate Standards) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	62.7	0.6	1.5	7.9	12.3	40.5
Estimated average crash freq. during Study Period, crashes/yr:	62.7	0.6	1.5	7.9	12.3	40.5

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	4	62.7	0.6	1.5	7.9	12.3	40.5
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	62.7	0.6	1.5	7.9	12.3	40.5
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.1	0.0	0.0	0.0	0.1	0.0
	Right-angle crashes:	0.7	0.0	0.0	0.1	0.2	0.3
	Rear-end crashes:	20.6	0.2	0.6	3.1	4.9	11.8
	Sideswipe crashes:	6.7	0.1	0.1	0.8	1.2	4.5
	Other multiple-vehicle crashes:	0.8	0.0	0.0	0.1	0.2	0.4
	Total multiple-vehicle crashes:	28.9	0.3	0.8	4.2	6.5	17.1
Single vehicle	Crashes with animal:	0.6	0.0	0.0	0.0	0.0	0.5
	Crashes with fixed object:	24.3	0.2	0.5	2.7	4.2	16.7
	Crashes with other object:	3.8	0.0	0.0	0.2	0.3	3.2
	Crashes with parked vehicle:	0.5	0.0	0.0	0.1	0.1	0.4
	Other single-vehicle crashes	4.7	0.1	0.1	0.8	1.2	2.5
	Total single-vehicle crashes:	33.8	0.3	0.7	3.7	5.8	23.4
	Total crashes:	62.7	0.6	1.5	7.9	12.3	40.5

Evaluation Site Summary

General Information

Project description:	ProjectH141265b (I-87 Upgrade to Interstate Standards) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		12.040	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	3.170	Thomas overpass to Kingsboro
2	4	5.820	Kingsboro to McNair
3	4	2.320	Mcnair to 258
4	4	0.730	258 to Mutual
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Report Overview

Report Generated: Mar 1, 2019 11:22 AM
Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 12:53:34 CST 2019
IHSDM Version: v14.0.0 (Sep 26, 2018)
Crash Prediction Module: v9.0.0 (Sep 26, 2018)

User Name: sandbergj
Organization Name:
Phone:
E-Mail:

Project Title: NCDOT INFRA - R-5869A
Project Comment: Created Tue Feb 19 08:38:21 CST 2019
Project Unit System: U.S. Customary

Highway Title: US 17
Highway Comment: Created Tue Feb 19 08:38:57 CST 2019
Highway Version: 4

Evaluation Title: Evaluation 2
Evaluation Comment: Created Tue Feb 19 12:52:49 CST 2019

Minimum Location: 10+00.000
Maximum Location: 30+00.000
Policy for Superelevation: AASHTO 2011 U.S. Customary
Calibration: HSM Configuration
Crash Distribution: HSM Configuration

Model/CMF: HSM Configuration
Empirical-Bayes Analysis: None
First Year of Analysis: 2035
Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1
Evaluation Start Location: 10+00.000
Evaluation End Location: 30+00.000
Area Type: Suburban
Functional Class: Arterial
Type of Alignment: Divided, Multilane
Model Category: Urban/Suburban Arterial
Calibration Factor: 4D=1.0; 4SG=1.0;

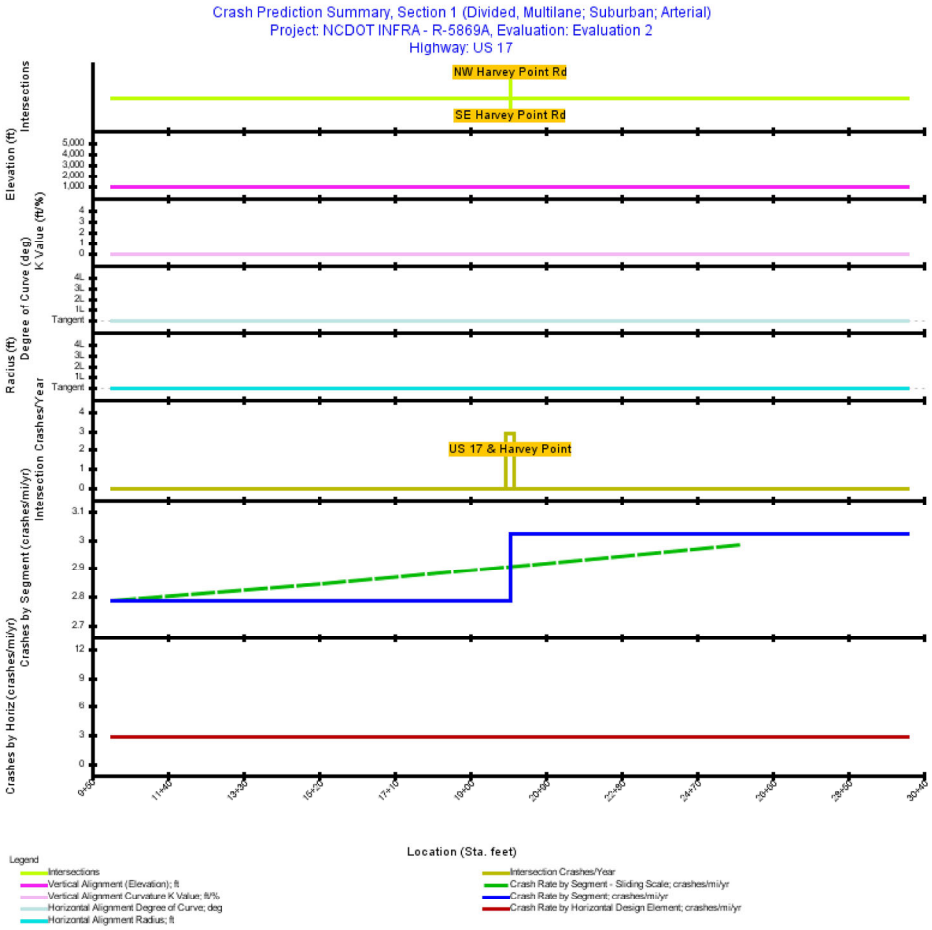

Figure Crash Prediction Summary (Section 1)

Table

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus
1	4D	10+00.000	17+10.000	710.00	0.1345	2035: 15,200	0	0	0	
2	4D	17+10.000	20+00.000	290.00	0.0549	2035: 15,200	0	0	0	
3	4D	20+00.000	22+60.000	260.00	0.0492	2035: 16,300	0	0	0	
4	4D	22+60.000	30+00.000	740.00	0.1401	2035: 16,300	0	0	0	

Table 2. Evaluation Intersection (Sect

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pede Vo (crossi
1	US 17 & Harvey Point	20+00.000	2035: 16,300	2035: 7,100	4	Signalized	Four-Legged Signalized	2	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

First Year of Analysis	**2035**
Last Year of Analysis	**2035**
Evaluated Length (mi)	**0.3788**
Average Future Road AADT (vpd)	**15,750**
Predicted Crashes	
Total Crashes	**3.98**
Fatal and Injury Crashes	**1.26**
Property-Damage-Only Crashes	**2.72**
Percent of Total Predicted Crashes	
Percent Fatal and Injury Crashes (%)	**32**
Percent Property-Damage-Only Crashes (%)	**68**
Predicted Crash Rate	
Crash Rate (crashes/mi/yr)	**10.5086**
FI Crash Rate (crashes/mi/yr)	**3.3333**
PDO Crash Rate (crashes/mi/yr)	**7.1753**

Predicted Travel Crash Rate	
Total Travel (million veh-mi)	**2.18**
Travel Crash Rate (crashes/million veh-mi)	**1.83**
Travel FI Crash Rate (crashes/million veh-mi)	**0.58**
Travel PDO Crash Rate (crashes/million veh-mi)	**1.25**

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersectic

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predi (crasl
1	10+00.000	17+10.000	0.1345	0.375	0.3746	0.1036	0.2710	
2	17+10.000	20+00.000	0.0549	0.153	0.1530	0.0423	0.1107	
US 17 & Harvey Point	20+00.000			2.880	2.8803	0.9580	1.9223	
3	20+00.000	22+60.000	0.0492	0.149	0.1489	0.0413	0.1076	
4	22+60.000	30+00.000	0.1402	0.424	0.4237	0.1174	0.3063	
All Segments			0.3788	1.100	1.1003	0.3046	0.7956	
All Intersections				2.880	2.8803	0.9580	1.9223	
Total			0.3788	3.981	3.9805	1.2626	2.7179	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Crash Rate (crashes/mi/yr)
Tangent	10+00.000	30+00.000	0.3788	1.100	1.1003	0.3046	0.7956	2.9047

Table 6. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	3.98	1.26	0.317	2.72	0.683
Total	3.98	1.26	0.317	2.72	0.683
Average	3.98	1.26	0.317	2.72	0.683

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Collision with Animal	0.00	0.0	0.01	0.3	0.01	0.3
Highway Segment	Collision with Bicycle	0.01	0.1	0.00	0.0	0.01	0.1
Highway Segment	Collision with Fixed Object	0.02	0.5	0.15	3.9	0.17	4.4
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Other Single-vehicle Collision	0.02	0.4	0.02	0.5	0.04	1.0
Highway Segment	Collision with Pedestrian	0.02	0.5	0.00	0.0	0.02	0.5
Highway Segment	Total Segment Single Vehicle Crashes	0.06	1.6	0.19	4.8	0.25	6.4
Highway Segment	Angle Collision	0.01	0.2	0.02	0.5	0.03	0.8
Highway Segment	Driveway-related Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Head-on Collision	0.01	0.1	0.00	0.1	0.01	0.2
Highway Segment	Other Multi-vehicle Collision	0.01	0.3	0.04	1.1	0.06	1.4
Highway Segment	Rear-end Collision	0.20	5.1	0.40	10.1	0.60	15.1
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.1	0.00	0.0	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.01	0.3	0.14	3.4	0.15	3.7
Highway Segment	Total Segment Multiple Vehicle Crashes	0.24	6.1	0.60	15.2	0.85	21.3
Highway Segment	Total Highway Segment Crashes	0.30	7.7	0.80	20.0	1.10	27.6
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.04	1.1	0.00	0.0	0.04	1.1
Intersection	Collision with Fixed Object	0.04	1.0	0.12	2.9	0.16	3.9
Intersection	Non-Collision	0.01	0.2	0.01	0.1	0.01	0.3
Intersection	Collision with Other Object	0.00	0.1	0.01	0.2	0.01	0.3
Intersection	Other Single-vehicle Collision	0.00	0.1	0.00	0.1	0.01	0.1
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.4	0.00	0.0	0.01	0.4
Intersection	Total Intersection Single Vehicle Crashes	0.11	2.8	0.14	3.4	0.24	6.1
Intersection	Angle Collision	0.29	7.4	0.44	11.0	0.73	18.4
Intersection	Head-on Collision	0.04	1.0	0.05	1.3	0.10	2.4
Intersection	Other Multi-vehicle Collision	0.05	1.2	0.38	9.5	0.42	10.6
Intersection	Rear-end Collision	0.38	9.6	0.86	21.7	1.25	31.3
Intersection	Sideswipe	0.08	2.1	0.06	1.4	0.14	3.5
Intersection	Total Intersection Multiple Vehicle Crashes	0.85	21.3	1.79	44.9	2.64	66.2
Intersection	Total Intersection Crashes	0.96	24.1	1.92	48.3	2.88	72.4
	Total Crashes	1.26	31.7	2.72	68.3	3.98	100.0

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

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Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Report Overview

Report Generated: Mar 1, 2019 11:24 AM
Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 12:55:44 CST 2019
IHSDM Version: v14.0.0 (Sep 26, 2018)
Crash Prediction Module: v9.0.0 (Sep 26, 2018)

User Name: sandbergj
Organization Name:
Phone:
E-Mail:

Project Title: NCDOT INFRA - R-5869A
Project Comment: Created Tue Feb 19 08:38:21 CST 2019
Project Unit System: U.S. Customary

Highway Title: Harvey Point Rd
Highway Comment: Created Tue Feb 19 08:49:53 CST 2019
Highway Version: 3

Evaluation Title: Evaluation 1
Evaluation Comment: Created Tue Feb 19 12:55:23 CST 2019

Minimum Location: 10+00.000
Maximum Location: 20+00.000
Policy for Superelevation: AASHTO 2011 U.S. Customary
Calibration: HSM Configuration
Crash Distribution: HSM Configuration

Model/CMF: HSM Configuration
Empirical-Bayes Analysis: None
First Year of Analysis: 2035
Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1
Evaluation Start Location: 10+00.000
Evaluation End Location: 20+00.000
Area Type: Suburban
Functional Class: Arterial
Type of Alignment: Undivided, Two Lane
Model Category: Urban/Suburban Arterial
Calibration Factor: 3T=1.0; 4SG=1.0;

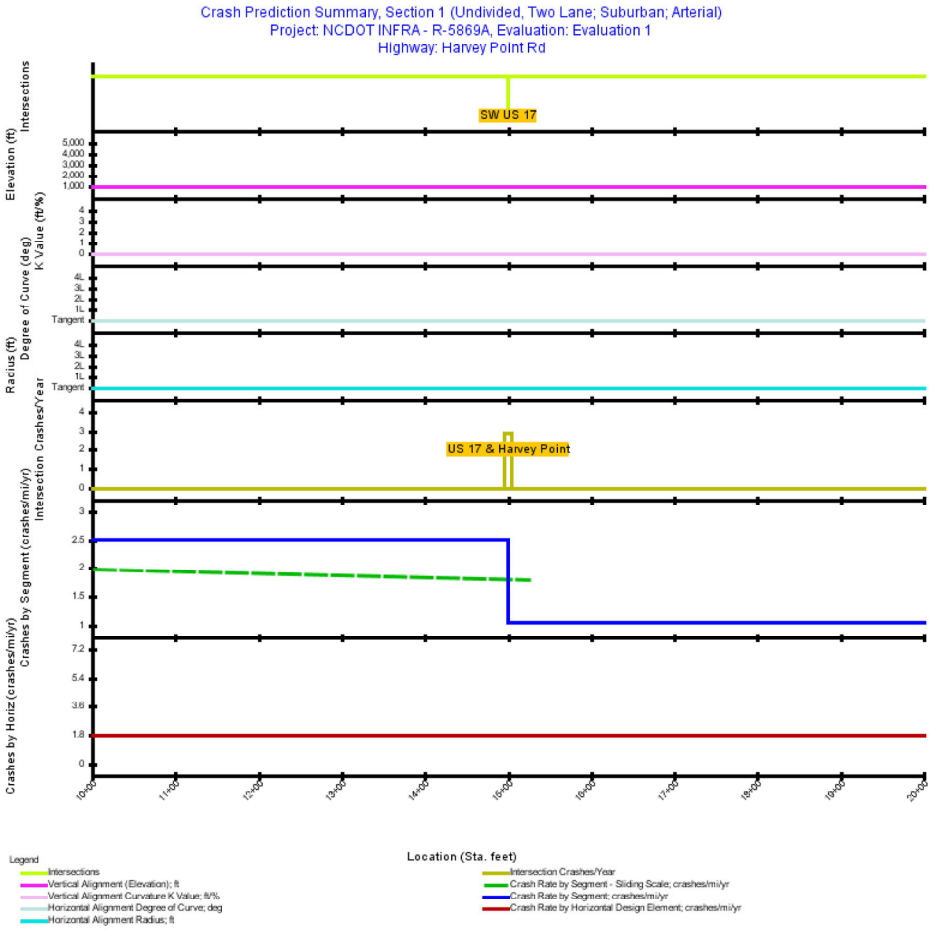

Figure Crash Prediction Summary (Section 1)

Table 1.

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	Nu Indust

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	Nu Indust
1	3T	10+00.000	15+00.000	500.00	0.0947	2035: 7,100	0	6	0	
2	3T	15+00.000	20+00.000	500.00	0.0947	2035: 4,300	0	2	0	

Table 2. Evaluation Intersection (Sect

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pede Vo (crossi
1	US 17 & Harvey Point	15+00.000	2035: 16,300	2035: 7,100	4	Signalized	Four-Legged Signalized	2	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

First Year of Analysis	**2035**
Last Year of Analysis	**2035**
Evaluated Length (mi)	**0.1894**
Average Future Road AADT (vpd)	**5,700**
Predicted Crashes	
Total Crashes	**3.22**
Fatal and Injury Crashes	**1.04**
Property-Damage-Only Crashes	**2.17**
Percent of Total Predicted Crashes	
Percent Fatal and Injury Crashes (%)	**32**
Percent Property-Damage-Only Crashes (%)	**68**
Predicted Crash Rate	
Crash Rate (crashes/mi/yr)	**16.9879**
FI Crash Rate (crashes/mi/yr)	**5.5031**
PDO Crash Rate (crashes/mi/yr)	**11.4848**
Predicted Travel Crash Rate	
Total Travel (million veh-mi)	**0.39**
Travel Crash Rate (crashes/million veh-mi)	**8.16**
Travel FI Crash Rate (crashes/million veh-mi)	**2.65**

Travel PDO Crash Rate (crashes/million veh-mi)	5.52

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersectic

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predi (crash
1	10+00.000	15+00.000	0.0947	0.237	0.2371	0.0598	0.1773	
US 17 & Harvey Point	15+00.000			2.880	2.8803	0.9580	1.9223	
2	15+00.000	20+00.000	0.0947	0.100	0.1000	0.0244	0.0756	
All Segments			0.1894	0.337	0.3371	0.0842	0.2529	
All Intersections				2.880	2.8803	0.9580	1.9223	
Total			0.1894	3.217	3.2174	1.0423	2.1752	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Crash Rate (crashes/mi/yr)
Tangent	10+00.000	20+00.000	0.1894	0.337	0.3371	0.0842	0.2529	1.7801

Table 6. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	3.22	1.04	0.324	2.17	0.676
Total	3.22	1.04	0.324	2.17	0.676
Average	3.22	1.04	0.324	2.17	0.676

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Collision with Bicycle	0.00	0.1	0.00	0.0	0.00	0.1
Highway Segment	Collision with Fixed Object	0.01	0.4	0.04	1.4	0.06	1.8
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.0	0.00	0.0

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Other Single-vehicle Collision	0.01	0.2	0.00	0.0	0.01	0.2
Highway Segment	Collision with Pedestrian	0.00	0.1	0.00	0.0	0.00	0.1
Highway Segment	Total Segment Single Vehicle Crashes	0.03	0.8	0.04	1.4	0.07	2.2
Highway Segment	Angle Collision	0.00	0.1	0.00	0.1	0.01	0.1
Highway Segment	Driveway-related Collision	0.03	0.8	0.08	2.6	0.11	3.4
Highway Segment	Head-on Collision	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Other Multi-vehicle Collision	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Rear-end Collision	0.03	0.8	0.10	3.3	0.13	4.1
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.00	0.0	0.01	0.3	0.01	0.3
Highway Segment	Total Segment Multiple Vehicle Crashes	0.06	1.8	0.21	6.5	0.27	8.3
Highway Segment	Total Highway Segment Crashes	0.08	2.6	0.25	7.9	0.34	10.5
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.04	1.3	0.00	0.0	0.04	1.3
Intersection	Collision with Fixed Object	0.04	1.2	0.12	3.6	0.16	4.8
Intersection	Non-Collision	0.01	0.2	0.01	0.1	0.01	0.4
Intersection	Collision with Other Object	0.00	0.1	0.01	0.3	0.01	0.4
Intersection	Other Single-vehicle Collision	0.00	0.1	0.00	0.1	0.01	0.2
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.5	0.00	0.0	0.01	0.5
Intersection	Total Intersection Single Vehicle Crashes	0.11	3.4	0.14	4.2	0.24	7.6
Intersection	Angle Collision	0.29	9.1	0.44	13.6	0.73	22.7
Intersection	Head-on Collision	0.04	1.3	0.05	1.7	0.10	3.0
Intersection	Other Multi-vehicle Collision	0.05	1.4	0.38	11.7	0.42	13.2
Intersection	Rear-end Collision	0.38	11.9	0.86	26.8	1.25	38.7
Intersection	Sideswipe	0.08	2.6	0.06	1.8	0.14	4.4
Intersection	Total Intersection Multiple Vehicle Crashes	0.85	26.4	1.79	55.6	2.64	81.9
Intersection	Total Intersection Crashes	0.96	29.8	1.92	59.7	2.88	89.5
	Total Crashes	1.04	32.4	2.17	67.6	3.22	100.0

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

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Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Report Overview

Report Generated: Mar 1, 2019 11:22 AM
Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 13:52:10 CST 2019
IHSDM Version: v14.0.0 (Sep 26, 2018)
Crash Prediction Module: v9.0.0 (Sep 26, 2018)

User Name: sandbergj
Organization Name:
Phone:
E-Mail:

Project Title: NCDOT INFRA - R-5869B
Project Comment: Created Tue Feb 19 09:20:19 CST 2019
Project Unit System: U.S. Customary

Highway Title: US 17
Highway Comment: Created Tue Feb 19 09:20:33 CST 2019
Highway Version: 6

Evaluation Title: Evaluation 4
Evaluation Comment: Created Tue Feb 19 13:22:32 CST 2019

Minimum Location: 10+00.000
Maximum Location: 30+00.000
Policy for Superelevation: AASHTO 2011 U.S. Customary
Calibration: HSM Configuration
Crash Distribution: HSM Configuration

Model/CMF: HSM Configuration
Empirical-Bayes Analysis: None
First Year of Analysis: 2035
Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1
Evaluation Start Location: 10+00.000
Evaluation End Location: 30+00.000
Area Type: Suburban
Functional Class: Arterial
Type of Alignment: Divided, Multilane
Model Category: Urban/Suburban Arterial
Calibration Factor: 4D=1.0; 4SG=1.0;

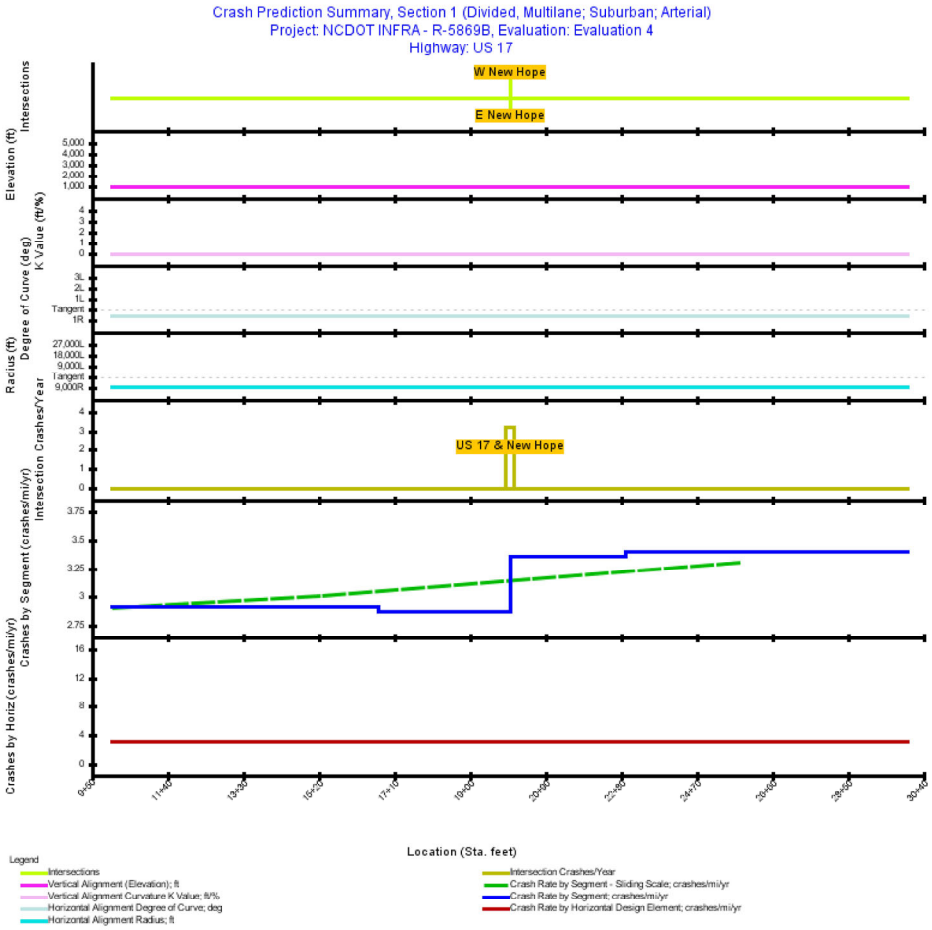

Figure Crash Prediction Summary (Section 1)

Table

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus
1	4D	10+00.000	16+70.000	670.00	0.1269	2035: 16,300	0	0	0	
2	4D	16+70.000	20+00.000	330.00	0.0625	2035: 16,300	0	0	0	
3	4D	20+00.000	22+90.000	290.00	0.0549	2035: 18,600	0	0	0	
4	4D	22+90.000	30+00.000	710.00	0.1345	2035: 18,600	0	0	0	

Table 2. Evaluation Intersection (Secti

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pedes Volu (crossing
1	US 17 & New Hope	20+00.000	2035: 18,600	2035: 3,400	4	Signalized	Four-Legged Signalized	3	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

First Year of Analysis	**2035**
Last Year of Analysis	**2035**
Evaluated Length (mi)	**0.3788**
Average Future Road AADT (vpd)	**17,450**
Predicted Crashes	
Total Crashes	**4.40**
Fatal and Injury Crashes	**1.42**
Property-Damage-Only Crashes	**2.98**
Percent of Total Predicted Crashes	
Percent Fatal and Injury Crashes (%)	**32**
Percent Property-Damage-Only Crashes (%)	**68**
Predicted Crash Rate	
Crash Rate (crashes/mi/yr)	**11.6188**
FI Crash Rate (crashes/mi/yr)	**3.7380**
PDO Crash Rate (crashes/mi/yr)	**7.8808**
Predicted Travel Crash Rate	
Total Travel (million veh-mi)	**2.41**

Travel Crash Rate (crashes/million veh-mi)	**1.82**
Travel FI Crash Rate (crashes/million veh-mi)	**0.59**
Travel PDO Crash Rate (crashes/million veh-mi)	**1.24**

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersectic

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predi (crash
1	10+00.000	16+70.000	0.1269	0.369	0.3691	0.1023	0.2668	
2	16+70.000	20+00.000	0.0625	0.179	0.1795	0.0498	0.1298	
US 17 & New Hope	20+00.000			3.211	3.2108	1.0855	2.1252	
3	20+00.000	22+90.000	0.0549	0.184	0.1844	0.0513	0.1332	
4	22+90.000	30+00.000	0.1345	0.457	0.4573	0.1271	0.3302	
All Segments			0.3788	1.190	1.1903	0.3304	0.8599	
All Intersections				3.211	3.2108	1.0855	2.1252	
Total			0.3788	4.401	4.4011	1.4159	2.9852	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Crash Rate (crashes/mi/yr)	I (
Simple Curve 1	10+00.000	30+00.000	0.3788	1.190	1.1903	0.3304	0.8599	3.1424	

Table 6. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	4.40	1.42	0.322	2.98	0.678
Total	4.40	1.42	0.322	2.98	0.678
Average	4.40	1.42	0.322	2.98	0.678

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Collision with Animal	0.00	0.0	0.01	0.3	0.01	0.3
Highway Segment	Collision with Bicycle	0.01	0.1	0.00	0.0	0.01	0.1
Highway Segment	Collision with Fixed Object	0.02	0.4	0.15	3.5	0.17	4.0
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Other Single-vehicle Collision	0.02	0.4	0.02	0.5	0.04	0.9
Highway Segment	Collision with Pedestrian	0.02	0.5	0.00	0.0	0.02	0.5
Highway Segment	Total Segment Single Vehicle Crashes	0.07	1.5	0.19	4.3	0.26	5.8
Highway Segment	Angle Collision	0.01	0.2	0.02	0.5	0.04	0.8
Highway Segment	Driveway-related Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Head-on Collision	0.01	0.1	0.01	0.1	0.01	0.2
Highway Segment	Other Multi-vehicle Collision	0.01	0.3	0.05	1.1	0.06	1.4
Highway Segment	Rear-end Collision	0.22	5.0	0.44	10.1	0.66	15.1
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.1	0.00	0.0	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.01	0.3	0.15	3.4	0.16	3.7
Highway Segment	Total Segment Multiple Vehicle Crashes	0.27	6.0	0.67	15.2	0.93	21.2
Highway Segment	Total Highway Segment Crashes	0.33	7.5	0.86	19.5	1.19	27.0
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.05	1.1	0.00	0.0	0.05	1.1
Intersection	Collision with Fixed Object	0.04	0.9	0.12	2.8	0.16	3.7
Intersection	Non-Collision	0.01	0.2	0.01	0.1	0.01	0.3
Intersection	Collision with Other Object	0.00	0.1	0.01	0.2	0.01	0.3
Intersection	Other Single-vehicle Collision	0.00	0.0	0.00	0.1	0.01	0.1
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.3	0.00	0.0	0.01	0.3
Intersection	Total Intersection Single Vehicle Crashes	0.11	2.5	0.14	3.2	0.25	5.7
Intersection	Angle Collision	0.34	7.7	0.48	11.0	0.82	18.7
Intersection	Head-on Collision	0.05	1.1	0.06	1.4	0.11	2.4
Intersection	Other Multi-vehicle Collision	0.05	1.2	0.42	9.5	0.47	10.7
Intersection	Rear-end Collision	0.44	10.0	0.96	21.8	1.40	31.7
Intersection	Sideswipe	0.10	2.2	0.06	1.4	0.16	3.6
Intersection	Total Intersection Multiple Vehicle Crashes	0.97	22.2	1.98	45.1	2.96	67.2
Intersection	Total Intersection Crashes	1.09	24.7	2.12	48.3	3.21	73.0
	Total Crashes	1.42	32.2	2.98	67.8	4.40	100.0

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

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Interactive Highway Safety Design Model

Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 13:52:46 CST 2019
IHSDM Version: v14.0.0 (Sep 26, 2018)
Crash Prediction Module: v9.0.0 (Sep 26, 2018)

User Name: sandbergj
Organization Name:
Phone:
E-Mail:

Project Title: NCDOT INFRA - R-5869B
Project Comment: Created Tue Feb 19 09:20:19 CST 2019
Project Unit System: U.S. Customary

Highway Title: New Hope
Highway Comment: Created Tue Feb 19 13:11:34 CST 2019
Highway Version: 3

Evaluation Title: Evaluation 1
Evaluation Comment: Created Tue Feb 19 13:52:27 CST 2019

Minimum Location: 10+00.000
Maximum Location: 20+00.000
Policy for Superelevation: AASHTO 2011 U.S. Customary
Calibration: HSM Configuration
Crash Distribution: HSM Configuration

Model/CMF: HSM Configuration
Empirical-Bayes Analysis: None
First Year of Analysis: 2035
Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1
Evaluation Start Location: 10+00.000
Evaluation End Location: 20+00.000
Area Type: Suburban
Functional Class: Arterial
Type of Alignment: Undivided, Two Lane
Model Category: Urban/Suburban Arterial
Calibration Factor: 2U=1.0; 4SG=1.0;

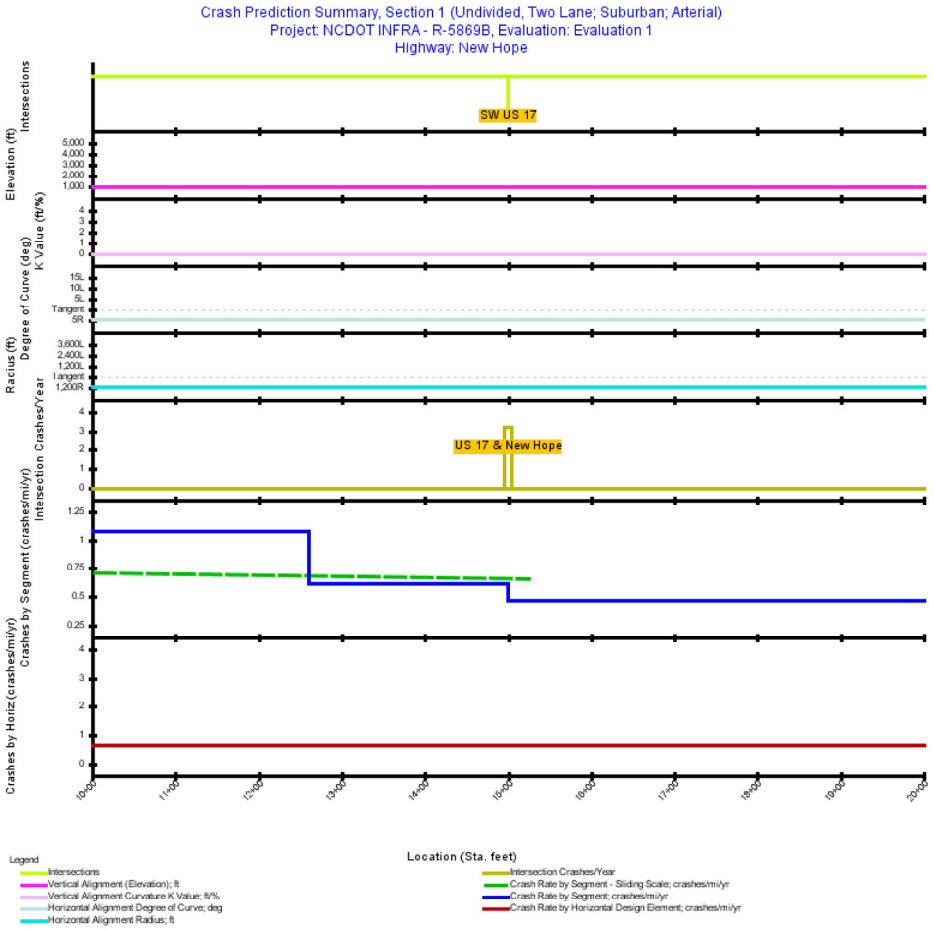

Figure Crash Prediction Summary (Section 1)

Table 1.

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	Nu Indust

Seg. No.	Type	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	Nu Indust
1	2U	10+00.000	12+60.000	260.00	0.0492	2035: 3,400	0	2	0	
2	2U	12+60.000	15+00.000	240.00	0.0454	2035: 3,400	0	0	0	
3	2U	15+00.000	20+00.000	500.00	0.0947	2035: 2,017	0	1	0	

Table 2. Evaluation Intersection (Secti

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	Approaches w/Right Turn Lanes	Approaches w/o Right Turn on Red	Pedes Volu (crossing
1	US 17 & New Hope	15+00.000	2035: 18,600	2035: 3,400	4	Signalized	Four-Legged Signalized	3	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

First Year of Analysis	**2035**
Last Year of Analysis	**2035**
Evaluated Length (mi)	**0.1894**
Average Future Road AADT (vpd)	**2,708**
Predicted Crashes	
Total Crashes	**3.34**
Fatal and Injury Crashes	**1.13**
Property-Damage-Only Crashes	**2.21**
Percent of Total Predicted Crashes	
Percent Fatal and Injury Crashes (%)	**34**
Percent Property-Damage-Only Crashes (%)	**66**
Predicted Crash Rate	
Crash Rate (crashes/mi/yr)	**17.6120**
FI Crash Rate (crashes/mi/yr)	**5.9491**
PDO Crash Rate (crashes/mi/yr)	**11.6629**
Predicted Travel Crash Rate	
Total Travel (million veh-mi)	**0.19**
Travel Crash Rate (crashes/million veh-mi)	**17.82**

Travel FI Crash Rate (crashes/million veh-mi)	**6.02**
Travel PDO Crash Rate (crashes/million veh-mi)	**11.80**

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersectic

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predi (crash
1	10+00.000	12+60.000	0.0492	0.053	0.0532	0.0171	0.0361	
2	12+60.000	15+00.000	0.0455	0.028	0.0280	0.0088	0.0192	
US 17 & New Hope	15+00.000			3.211	3.2108	1.0855	2.1252	
3	15+00.000	20+00.000	0.0947	0.044	0.0437	0.0153	0.0284	
All Segments			0.1894	0.125	0.1249	0.0412	0.0836	
All Intersections				3.211	3.2108	1.0855	2.1252	
Total			0.1894	3.336	3.3356	1.1267	2.2089	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	Total Predicted Crashes for Evaluation Period	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Crash Rate (crashes/mi/yr)	
Simple Curve 1	10+00.000	20+00.000	0.1894	0.125	0.1249	0.0412	0.0836	0.6592	

Table 6. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	3.34	1.13	0.338	2.21	0.662
Total	3.34	1.13	0.338	2.21	0.662
Average	3.34	1.13	0.338	2.21	0.662

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.
Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Collision with Animal	0.00	0.0	0.00	0.1	0.00	0.1
	Collision with Bicycle	0.00	0.0	0.00	0.0	0.00	0.0

Element Type	Crash Type	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment							
Highway Segment	Collision with Fixed Object	0.02	0.5	0.03	1.0	0.05	1.5
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Other Single-vehicle Collision	0.01	0.2	0.01	0.2	0.01	0.4
Highway Segment	Collision with Pedestrian	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Total Segment Single Vehicle Crashes	0.02	0.7	0.04	1.3	0.07	2.0
Highway Segment	Angle Collision	0.00	0.0	0.00	0.0	0.00	0.1
Highway Segment	Driveway-related Collision	0.01	0.3	0.02	0.6	0.03	0.9
Highway Segment	Head-on Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Other Multi-vehicle Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Rear-end Collision	0.01	0.2	0.01	0.5	0.02	0.6
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.0	0.00	0.0	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Total Segment Multiple Vehicle Crashes	0.02	0.5	0.04	1.2	0.06	1.7
Highway Segment	Total Highway Segment Crashes	0.04	1.2	0.08	2.5	0.12	3.7
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.05	1.4	0.00	0.0	0.05	1.4
Intersection	Collision with Fixed Object	0.04	1.1	0.12	3.7	0.16	4.8
Intersection	Non-Collision	0.01	0.2	0.01	0.1	0.01	0.4
Intersection	Collision with Other Object	0.00	0.1	0.01	0.3	0.01	0.4
Intersection	Other Single-vehicle Collision	0.00	0.1	0.00	0.1	0.01	0.2
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.4	0.00	0.0	0.01	0.4
Intersection	Total Intersection Single Vehicle Crashes	0.11	3.3	0.14	4.3	0.25	7.6
Intersection	Angle Collision	0.34	10.1	0.48	14.5	0.82	24.7
Intersection	Head-on Collision	0.05	1.4	0.06	1.8	0.11	3.2
Intersection	Other Multi-vehicle Collision	0.05	1.6	0.42	12.5	0.47	14.2
Intersection	Rear-end Collision	0.44	13.2	0.96	28.7	1.40	41.9
Intersection	Sideswipe	0.10	2.9	0.06	1.9	0.16	4.8
Intersection	Total Intersection Multiple Vehicle Crashes	0.97	29.2	1.98	59.5	2.96	88.7
Intersection	Total Intersection Crashes	1.09	32.5	2.12	63.7	3.21	96.3
	Total Crashes	1.13	33.8	2.21	66.2	3.34	100.0

Note: *Fatal and Injury Crashes* and *Property Damage Only Crashes* do not necessarily sum up to *Total Crashes* because the distribution of these three crashes had

been derived independently.

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Output Summary

General Information

Project description:	Project H129200-BA (I-95 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	200.5	1.0	2.8	14.7	39.0	143.0
Estimated average crash freq. during Study Period, crashes/yr:	200.5	1.0	2.8	14.7	39.0	143.0

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	3	200.5	1.0	2.8	14.7	39.0	143.0
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	200.5	1.0	2.8	14.7	39.0	143.0
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.6	0.0	0.0	0.1	0.3	0.2
	Right-angle crashes:	3.8	0.0	0.1	0.4	1.0	2.2
	Rear-end crashes:	123.5	0.7	1.8	9.6	25.5	85.9
	Sideswipe crashes:	42.2	0.2	0.4	2.3	6.2	33.1
	Other multiple-vehicle crashes:	4.5	0.0	0.1	0.4	1.0	3.0
	Total multiple-vehicle crashes:	174.7	0.9	2.5	12.8	34.1	124.5
Single vehicle	Crashes with animal:	0.4	0.0	0.0	0.0	0.0	0.4
	Crashes with fixed object:	18.6	0.1	0.3	1.4	3.5	13.3
	Crashes with other object:	3.0	0.0	0.0	0.1	0.3	2.6
	Crashes with parked vehicle:	0.4	0.0	0.0	0.0	0.1	0.3
	Other single-vehicle crashes	3.5	0.0	0.1	0.4	1.0	1.9
	Total single-vehicle crashes:	25.9	0.1	0.4	2.0	4.9	18.5
	Total crashes:	200.5	1.0	2.8	14.7	39.0	143.0

Evaluation Site Summary

General Information

Project description:	Project H129200-BA (I-95 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):	4.680		
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	2.630	74 Gore to Caton Gore
2	4	1.760	Caton Gore to Carthage Gore
3	4	0.290	Gore to Gore
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project H129200-BA (I-95 Widening) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	133.4	1.1	2.9	15.2	24.1	90.1
Estimated average crash freq. during Study Period, crashes/yr:	133.4	1.1	2.9	15.2	24.1	90.1

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	3	133.4	1.1	2.9	15.2	24.1	90.1
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	133.4	1.1	2.9	15.2	24.1	90.1
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.4	0.0	0.0	0.1	0.2	0.1
	Right-angle crashes:	2.3	0.0	0.1	0.4	0.6	1.2
	Rear-end crashes:	72.7	0.7	1.7	9.1	14.5	46.7
	Sideswipe crashes:	24.2	0.2	0.4	2.2	3.5	18.0
	Other multiple-vehicle crashes:	2.7	0.0	0.1	0.4	0.6	1.6
	Total multiple-vehicle crashes:	102.3	0.9	2.3	12.2	19.3	67.7
Single vehicle	Crashes with animal:	0.5	0.0	0.0	0.0	0.0	0.5
	Crashes with fixed object:	22.3	0.2	0.4	2.2	3.5	16.1
	Crashes with other object:	3.6	0.0	0.0	0.2	0.2	3.1
	Crashes with parked vehicle:	0.5	0.0	0.0	0.0	0.1	0.3
	Other single-vehicle crashes	4.2	0.0	0.1	0.6	1.0	2.4
	Total single-vehicle crashes:	31.0	0.2	0.6	3.0	4.8	22.4
	Total crashes:	133.4	1.1	2.9	15.2	24.1	90.1

Evaluation Site Summary

General Information

Project description:	Project H129200-BA (I-95 Widening) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):	4.680		
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	2.630	74 Gore to Caton Gore
2	8	1.760	Caton Gore to Carthage Gore
3	8	0.290	Gore to Gore
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project I-5879 (I-95 &Carthage Interchange Improvement) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	3.3	0.0	0.0	0.1	0.6	2.5
Estimated average crash freq. during Study Period, crashes/yr:	3.3	0.0	0.0	0.1	0.6	2.5

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	2	3.3	0.0	0.0	0.1	0.6	2.5

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	3.3	0.0	0.0	0.1	0.6	2.5
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.0	0.0	0.0	0.0	0.0	0.0
	Right-angle crashes:	1.3	0.0	0.0	0.1	0.3	0.9
	Rear-end crashes:	1.2	0.0	0.0	0.1	0.2	0.9
	Sideswipe crashes:	0.2	0.0	0.0	0.0	0.0	0.2
	Other multiple-vehicle crashes:	0.1	0.0	0.0	0.0	0.0	0.0
	Total multiple-vehicle crashes:	2.8	0.0	0.0	0.1	0.6	2.1
Single vehicle	Crashes with animal:	0.0	0.0	0.0	0.0	0.0	0.0
	Crashes with fixed object:	0.3	0.0	0.0	0.0	0.1	0.3
	Crashes with other object:	0.0	0.0	0.0	0.0	0.0	0.0
	Crashes with parked vehicle:	0.0	0.0	0.0	0.0	0.0	0.0
	Other single-vehicle crashes	0.1	0.0	0.0	0.0	0.0	0.0
	Total single-vehicle crashes:	0.4	0.0	0.0	0.0	0.1	0.3
	Total crashes:	3.3	0.0	0.0	0.1	0.6	2.5

Evaluation Site Summary

General Information

Project description:	Project I-5879 (I-95 &Carthage Interchange Improvement) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		0.000	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	0	0.000	0
2	0	0.000	0
3	0	0.000	0
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	D4	One stop	EB Ramps
2	D4	One stop	WB Ramps
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project H129200-BB (I-95 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	205.9	1.1	2.9	15.0	39.2	147.8
Estimated average crash freq. during Study Period, crashes/yr:	205.9	1.1	2.9	15.0	39.2	147.8

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	4	205.9	1.1	2.9	15.0	39.2	147.8
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	205.9	1.1	2.9	15.0	39.2	147.8
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.7	0.0	0.0	0.1	0.3	0.3
	Right-angle crashes:	4.1	0.0	0.1	0.4	1.1	2.5
	Rear-end crashes:	135.3	0.7	2.0	10.5	27.4	94.6
	Sideswipe crashes:	46.3	0.2	0.5	2.5	6.6	36.5
	Other multiple-vehicle crashes:	4.9	0.0	0.1	0.4	1.1	3.2
	Total multiple-vehicle crashes:	191.4	1.0	2.7	14.0	36.6	137.1
Single vehicle	Crashes with animal:	0.2	0.0	0.0	0.0	0.0	0.2
	Crashes with fixed object:	10.5	0.1	0.1	0.7	1.9	7.7
	Crashes with other object:	1.7	0.0	0.0	0.1	0.1	1.5
	Crashes with parked vehicle:	0.2	0.0	0.0	0.0	0.0	0.2
	Other single-vehicle crashes	1.9	0.0	0.0	0.2	0.5	1.1
	Total single-vehicle crashes:	14.5	0.1	0.2	1.0	2.6	10.7
	Total crashes:	205.9	1.1	2.9	15.0	39.2	147.8

Evaluation Site Summary

General Information

Project description:	Project H129200-BB (I-95 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		2.840	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	0.800	Carthage Goe to 211 Gore
2	4	0.330	Gore to Gore
3	4	1.360	211 Gore to 301 Gore
4	4	0.350	Gore to Gore
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project H129200-BB (I-95 Widening) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	129.0	1.1	2.8	14.8	22.9	87.3
Estimated average crash freq. during Study Period, crashes/yr:	129.0	1.1	2.8	14.8	22.9	87.3

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	4	129.0	1.1	2.8	14.8	22.9	87.3
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	129.0	1.1	2.8	14.8	22.9	87.3
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.4	0.0	0.0	0.1	0.2	0.1
	Right-angle crashes:	2.5	0.0	0.1	0.4	0.6	1.3
	Rear-end crashes:	79.6	0.7	1.9	10.0	15.4	51.6
	Sideswipe crashes:	26.6	0.2	0.5	2.4	3.7	19.8
	Other multiple-vehicle crashes:	2.9	0.0	0.1	0.4	0.6	1.8
	Total multiple-vehicle crashes:	112.0	1.0	2.6	13.3	20.5	74.7
Single vehicle	Crashes with animal:	0.3	0.0	0.0	0.0	0.0	0.3
	Crashes with fixed object:	12.2	0.1	0.2	1.1	1.7	9.1
	Crashes with other object:	2.0	0.0	0.0	0.1	0.1	1.8
	Crashes with parked vehicle:	0.2	0.0	0.0	0.0	0.0	0.2
	Other single-vehicle crashes	2.2	0.0	0.1	0.3	0.5	1.3
	Total single-vehicle crashes:	17.0	0.1	0.3	1.6	2.4	12.6
	Total crashes:	129.0	1.1	2.8	14.8	22.9	87.3

Evaluation Site Summary

General Information

Project description:	Project H129200-BB (I-95 Widening) - Proposed				
Analyst:	JJS	Date:	3/1/2019	Area type:	Urban
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		2.840	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	0.800	Carthage Goe to 211 Gore
2	8	0.330	Gore to Gore
3	8	1.360	211 Gore to 301 Gore
4	8	0.350	Gore to Gore
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project I-5987 (I-95 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Rural
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	483.6	3.8	9.6	40.9	78.8	350.5
Estimated average crash freq. during Study Period, crashes/yr:	483.6	3.8	9.6	40.9	78.8	350.5

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	13	483.6	3.8	9.6	40.9	78.8	350.5
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	483.6	3.8	9.6	40.9	78.8	350.5
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
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	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	3.1	0.1	0.1	0.6	1.1	1.2
	Right-angle crashes:	14.5	0.2	0.4	1.8	3.5	8.5
	Rear-end crashes:	213.2	1.9	4.9	20.7	40.0	145.7
	Sideswipe crashes:	134.7	0.7	1.8	7.8	15.0	109.4
	Other multiple-vehicle crashes:	28.5	0.2	0.5	1.9	3.7	22.2
	Total multiple-vehicle crashes:	393.9	3.1	7.7	32.8	63.4	286.9
Single vehicle	Crashes with animal:	4.3	0.0	0.0	0.1	0.1	4.1
	Crashes with fixed object:	54.5	0.4	1.1	4.6	8.7	39.7
	Crashes with other object:	8.9	0.0	0.1	0.3	0.5	8.1
	Crashes with parked vehicle:	2.0	0.0	0.0	0.2	0.4	1.4
	Other single-vehicle crashes	19.9	0.3	0.7	3.0	5.7	10.2
	Total single-vehicle crashes:	89.7	0.8	1.9	8.1	15.4	63.5
	Total crashes:	483.6	3.8	9.6	40.9	78.8	350.5

Evaluation Site Summary

General Information

Project description:	Project I-5987 (I-95 Widening) - Existing Conditions				
Analyst:	JJS	Date:	3/1/2019	Area type:	Rural
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		17.390	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	4	1.600	S limits to end curve
2	4	1.470	End Curve to 301 SB Gore
3	4	0.130	301 SB Gore to Gore
4	4	0.230	301 SB Gore to 301 NB Gore
5	4	0.140	301 NB Gore to Gore
6	4	4.910	301 NB gore to End Crv
7	4	0.980	End Crv to NC 20 Gore
8	4	0.450	Gore to Gore
9	4	1.230	NC 20 Gore to End of Crv
10	4	0.360	NC20 Gore to Gore
11	4	0.480	NC 20 Gore to End Curve
12	4	1.090	End Curve to End Curve
13	4	4.320	End Curve to End Curve
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	Project I-5987 (I-95 Widening) - Proposed (Widen to 8 lanes)				
Analyst:	JJS	Date:	3/1/2019	Area type:	Rural
First year of analysis:	2035				
Last year of analysis:	2035				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	343.4	4.0	9.6	41.2	52.9	235.8
Estimated average crash freq. during Study Period, crashes/yr:	343.4	4.0	9.6	41.2	52.9	235.8

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	13	343.4	4.0	9.6	41.2	52.9	235.8
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2035	343.4	4.0	9.6	41.2	52.9	235.8
	2036						
	2037						
	2038						
	2039						
	2040						
	2041						
	2042						
	2043						
	2044						
	2045						
	2046						
	2047						
	2048						
	2049						
	2050						
	2051						
	2052						
	2053						
	2054						
	2055						
	2056						
	2057						
	2058						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	2.0	0.1	0.1	0.5	0.7	0.6
	Right-angle crashes:	9.0	0.2	0.4	1.6	2.1	4.8
	Rear-end crashes:	130.1	1.8	4.3	18.6	23.9	81.6
	Sideswipe crashes:	79.4	0.7	1.6	6.9	9.0	61.3
	Other multiple-vehicle crashes:	16.9	0.2	0.4	1.7	2.2	12.4
	Total multiple-vehicle crashes:	237.6	2.8	6.8	29.4	37.9	160.6
Single vehicle	Crashes with animal:	5.2	0.0	0.0	0.1	0.1	4.9
	Crashes with fixed object:	64.3	0.6	1.6	6.7	8.5	46.9
	Crashes with other object:	10.4	0.0	0.1	0.4	0.5	9.5
	Crashes with parked vehicle:	2.4	0.0	0.1	0.3	0.4	1.7
	Other single-vehicle crashes	23.5	0.4	1.0	4.3	5.5	12.1
	Total single-vehicle crashes:	105.9	1.1	2.8	11.8	15.0	75.1
	Total crashes:	343.4	4.0	9.6	41.2	52.9	235.8

Evaluation Site Summary

General Information

Project description:	Project I-5987 (I-95 Widening) - Proposed (Widen to 8 lanes)				
Analyst:	JJS	Date:	3/1/2019	Area type:	Rural
First year of analysis:	2035	Total length of freeway segments for Study Period (mi):		17.390	
Last year of analysis:	2035				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	1.600	S limits to end curve
2	8	1.470	End Curve to 301 SB Gore
3	8	0.130	301 SB Gore to Gore
4	8	0.230	301 SB Gore to 301 NB Gore
5	8	0.140	301 NB Gore to Gore
6	8	4.910	301 NB gore to End Crv
7	8	0.980	End Crv to NC 20 Gore
8	8	0.450	Gore to Gore
9	8	1.230	NC 20 Gore to End of Crv
10	8	0.360	NC20 Gore to Gore
11	8	0.480	NC 20 Gore to End Curve
12	8	1.090	End Curve to End Curve
13	8	4.320	End Curve to End Curve
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description		Number	Study Period Description
1	0		21	0
2	0		22	0
3	0		23	0
4	0		24	0
5	0		25	0
6	0		26	0
7	0		27	0
8	0		28	0
9	0		29	0
10	0		30	0
11	0		31	0
12	0		32	0
13	0		33	0
14	0		34	0
15	0		35	0
16	0		36	0
17	0		37	0
18	0		38	0
19	0		39	0
20	0		40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0